

EMERGENCY AIRWORTHINESS DIRECTIVE



Aircraft Certification Service
Washington, DC

U.S. Department
of Transportation
**Federal Aviation
Administration**

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DATE: September 13, 2002
AD #: 2002-19-51

Transmitted as follows is emergency airworthiness directive (AD) 2002-19-51, for the attention of owners and operators of all Boeing Model 737 series airplanes.

Background

The FAA has received several reports of failed flight control modules (FCM), which resulted in sluggish response of the aileron, elevator, and rudder surfaces on Boeing Model 737-600, -700, -700C, -800, and -900 series airplanes that were delivered after May 21, 2002. There are two FCMs per airplane, one for each hydraulic system. A failed FCM compensator blocked the flow of hydraulic fluid back to the hydraulic system reservoir. The cause of the compensators' failures has not been determined. However, the problem may result from a quality control defect.

This blockage causes a build up of hydraulic pressure within the aileron, elevator, and rudder power control units, resulting in sluggish flight control response for those surfaces. The most typical indication of blockage in an FCM compensator is that neither autopilot A nor B will engage in flight. Other indications include increased flight control forces (similar to manual reversion) and possible yaw damper disengagement.

Failure of one FCM could result in reduced controllability of the airplane. Failure of both FCMs could result in loss of control of the airplane.

The FCMs with the suspect compensators are recently manufactured, having part number (P/N) 65-44891-7. These FCMs are not only used on Boeing Model 737-600, -700, -700C, -800, and -900 series airplanes, but also are allowed to be installed on Boeing Model 100, -200, -200C, -300, -400, and -500 series airplanes. While the airplane manufacturer has informed us that suspect FCMs have not been installed on the earlier series airplanes to date, without this AD it is possible that they could be installed as replacement parts in the future.

Explanation of the Requirements of the Rule

Since an unsafe condition has been identified that is likely to exist or develop on other airplanes of this same type design, this AD is issued to require, for certain airplanes, an inspection to determine the S/N of the FCMs, having P/N 65-44891-7, and corrective actions if necessary. The corrective actions include replacing the affected FCM(s) with a serviceable FCM(s), having P/N 65-44891-7 with a S/N less than 8726, and revising the FAA-approved Airplane Flight Manual (AFM) to include procedures for certain airplanes to identify failures of affected FCMs before dispatch and to provide the flightcrew with operating procedures in the event of failure of a FCM in flight. This AD also requires certain operators to submit inspection findings to the FAA.

Interim Action

This is considered to be interim action until final action is identified, at which time the FAA may consider further rulemaking.

Determination of Rule's Effective Date

Since a situation exists that requires the immediate adoption of this regulation, it is found that notice and opportunity for prior public comment hereon are impracticable, and that good cause exists for making this AD effective in less than 30 days.

This rule is issued under 49 U.S.C. Section 44701 (formerly section 601 of the Federal Aviation Act of 1958) pursuant to the authority delegated to me by the Administrator, and is effective immediately upon receipt of this AD.

2002-19-51 BOEING: Docket No. 2002-NM-241-AD.

Applicability: All Model 737-100, -200, -200C, -300, -400, -500, -600, -700, -700C, -800, and -900 series airplanes; certificated in any category.

Note 1: This AD applies to each airplane identified in the preceding applicability provision, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of this AD. For airplanes that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must request approval for an alternative method of compliance in accordance with paragraph (l) of this AD. The request should include an assessment of the effect of the modification, alteration, or repair on the unsafe condition addressed by this AD; and, if the unsafe condition has not been eliminated, the request should include specific proposed actions to address it.

Compliance: Required as indicated, unless accomplished previously.

To prevent operation with one failed flight control module (FCM), which could result in reduced controllability of the airplane, or with two failed FCMs, which could result in loss of control of the airplane, accomplish the following:

Inspection

(a) For Model 737-600, -700, -700C, -800, and -900 series airplanes, having line numbers 1136 through 1230 inclusive: Before further flight after receipt of this AD, do an inspection to determine the serial number (S/N) of both flight control modules (FCM), having part number (P/N) 65-44891-7.

Neither FCM with S/N 8726 or Greater Installed

(b) If neither FCM has S/N 8726 or greater, no further action is required by this AD, except for the requirements specified in paragraphs (j) and (k) of this AD.

FCM(s) with S/N 8726 or Greater Installed

(c) If one FCM has S/N 8726 or greater, the airplane may continue to be operated, but within 24 hours after accomplishing the inspection required by paragraph (a) of this AD, do the actions specified in paragraphs (e) through (g) of this AD.

(d) If both FCMs have S/N 8726 or greater, do the actions specified in either paragraph (d)(1) or (d)(2) of this AD.

(1) Before further flight, replace one of the FCMs with a serviceable FCM, having P/N 65-44891-7 with a S/N less than 8726. Thereafter, the airplane may continue to be operated, but within 24 hours after accomplishing the inspection required by paragraph (a) of this AD, do the action specified in paragraphs (e) through (g) of this AD.

(2) Before further flight, replace both FCMs with serviceable FCMs having P/N 65-44891-7 with a S/N less than 8726. Thereafter, no further action is required by this AD, except for the requirements specified in paragraphs (j) and (k) of this AD.

(e) If required by paragraph (c), (d)(1), or (m) of this AD: Revise the Normal Procedures Section of the FAA-approved Airplane Flight Manual (AFM) to include the following (this may be accomplished by inserting this AD into the AFM):

"Pre-Flight Flight Control Module (FCM) Checks:

These checks can be performed any time after the Electric Hydraulic Pump A and B Switches are positioned ON and prior to Engine Start. Ensure ground personnel are clear of all control surfaces. If Minimum Equipment List (MEL) dispatch with one or both autopilot channels inoperative is planned, it is acceptable not to perform the check on the inoperative channel(s).

Flight Control Switch Check

1. Ensure FLT CONTROL A & B switches are ON
2. FLT CONTROL A Switch OFF
 - Verify Flight Controls LOW PRESSURE Light illuminates within 2 seconds.
3. FLT CONTROL A Switch ON
 - Verify Flight Control LOW PRESSURE Light extinguishes.
4. FLT CONTROL B Switch OFF
 - Verify Flight Controls LOW PRESSURE Light illuminates within 2 seconds.
5. FLT CONTROL B Switch ON
 - Verify Flight Controls LOW PRESSURE Light extinguishes.

NOTE: Failure of the Flight Control LOW PRESSURE Light to illuminate within 2 seconds may indicate a failure of the related flight

control module.

Autopilot Check

1. Ensure IRUs are in the NAV mode
2. A/P ENGAGE Switch CMD A
 - Wait 10 seconds, and verify light remains ON
3. Disengage A autopilot
4. A/P ENGAGE Switch CMD B
 - Wait 10 seconds, and verify light remains ON
5. Disengage B autopilot
6. To fail this test, one autopilot will fail to engage and the other will fail to stay engaged.

NOTE: Failure of the autopilots to engage as described in Step 6. may indicate a failure of a flight control module.

WARNING: If either Pre-Flight FCM Checks fails, do not takeoff until the failed module has been replaced."

(f) If required by paragraph (c), (d)(1), or (m) of this AD: Revise the Limitations Section of the FAA-approved AFM to include the following statement (this may be accomplished by inserting this AD into the AFM):

"If a flight control module (FCM), having P/N 65-44891-7 with S/N 8726 or greater is installed, the "Pre-Flight Flight Control Module (FCM) Checks" specified in the Normal Procedures of this AFM must be accomplished before each flight. If either Pre-Flight FCM Checks fails, do not takeoff until the failed module has been replaced. "

(g) If required by paragraph (c), (d)(1), or (m) of this AD: Revise the Non-Normal Procedures Section of the FAA-approved AFM to include the following (this may be accomplished by inserting this AD into the AFM):

"Flight Control Module (FCM) Failure:

Note: If the module fails in flight, neither A nor B autopilot will engage. Other indications include possible increased in flight control forces (similar to manual reversion) and possible yaw damper disengagement.

Failure of a second module in flight could result in serious degradation of airplane controllability, including high control forces.

If a failure is suspected in flight:

- Plan to land at the nearest suitable airport
 - Crosswind capability may be reduced
- Do not turn off any flight control switches
- Plan a flaps 15 landing
- Use VREF 15 + 5 or VREF ICE + 5"

Note 2: The Limitations, Non-Normal Procedures, and Normal Procedures specified by paragraphs (e) through (g) of this AD are required to be implemented only for airplanes on which suspect FCMs have been installed. However, individual pilots may operate other airplanes on which those suspect FCMs have not been installed, and that are not subject to those limitations and procedures. Therefore, to avoid any confusion or misunderstanding, it is important that airlines have communication mechanisms in place to ensure that pilots are aware, for each flight, whether the Limitations, Non-Normal Procedures, and Normal Procedures apply.

Failures Detected During "Flight Control Check"

(h) If any failure is detected during any "Pre-Flight Flight Control Module (FCM) Checks" specified in paragraph (e) of this AD, before further flight, replace the affected FCM with a serviceable FCM, having P/N 65-44891-7 with a S/N less than 8726.

Reporting Requirement

(i) Submit a report of inspection findings to the Boeing Renton Airline Support Manager, Craig Blankenstein, 2925 South 112th Street, Seattle, Washington 98168; fax (206) 544-9698; at the applicable time specified in paragraph (i)(1) or (i)(2) of this AD. (The report must include the airplane line number and FCM P/N and S/N.) Information collection requirements contained in this AD have been approved by the Office of Management and Budget (OMB) under the provisions of the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.) and have been assigned OMB Control Number 2120-0056.

(1) For airplanes on which the inspection required by paragraph (a) of this AD is accomplished after receipt of this AD: Submit the report within 10 days after performing the inspection required by paragraph (a) of this AD.

(2) For airplanes on which the inspection required by paragraph (a) of this AD has been accomplished before receipt of this AD: Submit the report within 10 days after receipt of this AD.

Part Installation

(j) For all airplanes: After receipt of this AD, no person shall install an FCM having P/N 65-44891-7 with a S/N 8726 or greater, on any airplane.

(k) After receipt of this AD, no person shall install a compensator, P/N 10-605603-3, on any FCM having P/N 65-44891-7.

Alternative Methods of Compliance

(l) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Manager, Seattle Aircraft Certification Office (ACO), FAA. Operators shall submit their requests through an appropriate FAA Principal Maintenance Inspector, who may add comments and then send it to the Manager, Seattle ACO.

Note 3: Information concerning the existence of approved alternative methods of compliance with this AD, if any, may be obtained from the Seattle ACO.

Special Flight Permits

(m) Special flight permits may be issued in accordance with sections 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate the airplane to a location where the requirements of this AD can be accomplished, provided that the airplane is operated per the requirements of paragraphs (e) through (g) of this AD, and that there are no known FCM failures upon dispatch.

Effective Date

(n) **AD 2002-19-51, issued on September 13, 2002, becomes effective upon receipt.**

Contact Information

For further information contact: Kenneth W. Frey, Aerospace Engineer, Systems and Equipment Branch, ANM-130S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98055-4056; telephone (425) 227-2673; fax (425) 227-1181.

Issued in Renton, Washington, on September 13, 2002.

ORIGINAL SIGNED BY:

VI L. LIPSKI

Transport Airplane Directorate,
Aircraft Certification Service.